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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,911	07/11/2001	Siegfried Luft	04906.P040	1859

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EXAMINER	
BULLOCK JR, LEWIS ALEXANDER	
ART UNIT	**PAPER NUMBER**
2195	

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/903,911	LUFT, SIEGFRIED	
	Examiner	**Art Unit**	
	Lewis A. Bullock, Jr.	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 04 February 2005.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-50 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-50 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 04 February 2005 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4/27/05; 5/2/05.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

The new drawings, submitted in the response filed 2/4/05, does not indicate a lead line in Fig. 2 that was shown in the prior drawings. The examiner has found no recitations in the specification regarding this lead line, therefore, no objection or rejection is necessary. However, the examiner would like clarification from Applicant whether this was intentional or accidental.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-50 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-42 all detail a machine-readable medium that provides instructions when **when** executed by a set of processors... There is no explicit tangible structure in the claims. The cited claims at best are software instructions that are capable of being executed by a processor, but not necessarily. Therefore, the cited claims are software and as proper in the M.P.E.P. 2106 are non-statutory. Stating that the instructions **are** executable by the processor instead of when would correct this. Claims 43-50 recite a network management system. Because the specification does not limit a system to just hardware or software executing on the hardware (see page 7, paragraph 26), the system is not tangible as proper in the M.P.E.P. 2106.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 7, 8, 12-19, 23, 25, 30-43, 45, 48 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over "An Itinerary-Diagram based Apprach for Mobile Agent Application Development" by CHEN et al. in view of KLEIN (U.S. Patent 5,329,626).

As to claim 1, CHEN teaches a machine-readable medium that provides instructions, which when executed by a set of one or more processors, cause the set of processors to perform operations comprising: instantiating a coordinator transaction agent (Master instance) that includes an itinerary (virtual graph) and a state machine (state machine) (pg. 211, "Our MSM model supports both mobility behavior and interaction behavior of agents. Unlike Lentini's, we use multiple state machines: Each agent is modeled by a state machine; the interaction among agents is models by the message-sending among these machines; the migration/cloning of an agent is by sending a message from the agent to a specific site to create a new copy of itself and then ending/continuing the execution in the current site."), said itinerary indicating a plurality of network elements (list of virtual sites / sites), the plurality of network elements in communication with the coordinator transaction agent (via the Master instance is able to create a copy of itself and forward the copy to one of the virtual sites

/ sites listed in the virtual graph); the coordinator transaction agent (Master Instance) causing itself to be replicated (copied) onto the plurality of network elements (virtual sites) according to the itinerary (virtual graph) (pg. 216, "The Master instance knows beforehand which virtual sites have to be visited. (This can be achieved by looking at the virtual graph.. This information is conveyed to the first Scout instance, and then to the next Scout instance, and then to the Scout instance, so on. This way, each Scout instance knows whether it is the one to stop the creation of another."); each of the replicated transaction agents (Scout instance) causing an indication of their replication (copy) to be communicated back to the coordinator transaction agent (via communicating results, etc. to Master instance) (pg. 215-216, "This Master does the following: i) creates a Scout instance; ii) collects information reported by (possible more than one) Scout instances; iii) post-processes the collected information, reports the result to the user, and kills itself."); and the coordinator transaction agent (Master instance) coordinating operations of the state machine (state machine) in each of the replicated transaction agents (Scout instance) to implement a distributed state machine.

However, CHEN does not explicitly state that the sites are physical systems or network elements. KLEIN teaches agent environment wherein agents represent a particular computation as a finite state machine and generates child agents that are sent to remote sites on other data processing systems to execute sub-transactions of an overall transaction and thereby change the state of the various agents in particularly a coordinator agent and other agents (col. 1, lines 47-68; col. 1, lines 20-28; col. 2, lines 58-67; col. 3, lines 4-52; col. 15, lines 19 – col. 16, line 21). Therefore, it would be

obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of CHEN with the teachings of KLEIN in order to facilitate the flexibility in making state transitions in each agent dependent on the status of other agents cooperating in the distributed process (col. 2, lines 34-37). However, KLIEN does not explicitly teach that the systems are network elements. Official Notice is taken in that it is well known in the art that network elements are switches, routers, application servers, file servers, end-user workstations, etc. CHEN teaches the approach is to design mobile agent applications for content-based multimedia information retrieval or electronic commerce on the Internet (pg. 209, Introduction) while KLIEN teaches that the remote sites are remote data processing systems (col. 1, lines 14-28). It would be obvious that in for the agent to retrieve documents from various sites the agent is being sent to remote computer systems, i.e. application servers, file servers, etc. Therefore, it would be obvious to one skilled in the art that the remote computer systems are network elements.

As to claim 16, CHEN teaches a machine readable medium that provides instructions, which when executed by a set of one or more processors, cause the set of processors to perform operations comprising: instantiating a coordinator transaction agent (Master instance) that includes an itinerary (virtual graph) and a state machine (state machine) (pg. 211, "Our MSM model supports both mobility behavior and interaction behavior of agents. Unlike Lentini's, we use multiple state machines: Each agent is modeled by a state machine; the interaction among agents is models by the

message-sending among these machines; the migration/cloning of an agent is by sending a message from the agent to a specific site to create a new copy of itself and then ending/continuing the execution in the current site."), the itinerary indicating a plurality of network elements (list of virtual sites / sites) onto which the transaction agent (Master instance / Scout instance) is to be replicated (copied), the plurality of network elements (list of virtual sites/ sites) in communication with the transaction agent (via the Master instance is able to create a copy of itself and forward the copy to one of the virtual sites / sites listed in the virtual graph); the coordinator transaction agent (Master instance) causing itself to be replicated and transmitted out (pg. 216, "The Master instance knows beforehand which virtual sites have to be visited. (This can be achieved by looking at the virtual graph.. This information is conveyed to the first Scout instance, and then to the next Scout instance, and then to the Scout instance, so on. This way, each Scout instance knows whether it is the one to stop the creation of another."); the coordinator transaction agent (Master instance) receiving from each of the replicated transaction agents (Scout instances) an indication of their replication (via communicating results, etc. to Master instance) (pg. 215-216, "This Master does the following: i) creates a Scout instance; ii) collects information reported by (possible more than one) Scout instances; iii) post-processes the collected information, reports the result to the user, and kills itself."); the coordinator transaction agent (Master instance) transmitting an indication for delivery to each of the replicated transaction agents that instructs them to perform a currently selected step of the state machine in their network element (via exchanging messages to satisfy a specific need of the collective goal); the

coordinator transaction agent (Master instance) receiving from each of the replicated transaction agents (Scout instances) an indication of their completion of the currently selected step (output message / result); and the coordinator transaction agent (Master instance) selecting a next state as the currently selected state of the state machine and repeating the transmitting and receiving steps until a final state of the state machine is reached (pg. 216, The Multiple State machine model, "Each object in this model is a state machine, which is an instance of a state machine type... In this model, state machines can receive input messages and send out output messages....MSM model can support both the mobility and interaction behavior of agents. This is because each agent's behavior is modeled as a state machine; the interaction among agents is models by the message-sending among these state machines; the migration/cloning of an agent is by sending a message from the agent to a specific site to create a new copy of itself and ending/continuing the executing in the current site."; pg. 219, 5.1.2 An example, "... In op_seq1, the instance of Scout will do the following....The information above will be used in Step three to revise templates and build the final state machine."; see also pages 219-222 that shows how the state machines create other objects and interact).

However, CHEN does not explicitly state that the sites are physical systems or network elements. KLEIN teaches agent environment wherein agents represent a particular computation as a finite state machine and generates child agents that are sent to remote sites on other data processing systems to execute sub-transactions of an overall transaction and thereby change the state of the various agents in particularly a

coordinator agent and other agents (col. 1, lines 47-68; col. 1, lines 20-28; col. 2, lines 58-67; col. 3, lines 4-52; col. 15, lines 19 – col. 16, line 21). Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of CHEN with the teachings of KLEIN in order to facilitate the flexibility in making state transitions in each agent dependent on the status of other agents cooperating in the distributed process (col. 2, lines 34-37). However, KLIEN does not explicitly teach that the systems are network elements. Official Notice is taken in that it is well known in the art that network elements are switches, routers, application servers, file servers, end-user workstations, etc. CHEN teaches the approach is to design mobile agent applications for content-based multimedia information retrieval or electronic commerce on the Internet (pg. 209, Introduction) while KLIEN teaches that the remote sites are remote data processing systems (col. 1, lines 14-28). It would be obvious that in for the agent to retrieve documents from various sites the agent is being sent to remote computer systems, i.e. application servers, file servers, etc. Therefore, it would be obvious to one skilled in the art that the remote computer systems are network elements.

As to claim 17, refer to claim 16 for rejection.

As to claim 23, refer to claim 16 for rejection.

As to claim 43, refer to claim 16 for rejection.

As to claim 2, CHEN teaches the coordinator transaction agent (Master instance) causing communication of a replication (copy) of the coordinator transaction agent to a first of the plurality of network elements (virtual sites / sites); the replicated transaction agent (Scout instance) in the first network element causing communication of a replication (copy) of itself to a second of the plurality of network elements (virtual site / site) (pg. 216, "The Master instance knows beforehand which virtual sites have to be visited. (This can be achieved by looking at the virtual graph.. This information is conveyed to the first Scout instance, and then to the next Scout instance, and then to the Scout instance, so on. This way, each Scout instance knows whether it is the one to stop the creation of another."; pg. 215-216, "This Master does the following: i) creates a Scout instance; ii) collects information reported by (possible more than one) Scout instances; iii) post-processes the collected information, reports the result to the user, and kills itself.").

As to claim 14, refer to claim 2 for rejection.

As to claim 15, Official Notice is taken in that it is well known in the art that network elements are switches, routers, application servers, file servers, end-user workstations, etc. CHEN teaches the approach is to design mobile agent applications for content-based multimedia information retrieval or electronic commerce on the Internet (pg. 209, Introduction). It would be obvious that in for the agent to retrieve

documents from various sites the agent is being sent to application servers, file servers, computing elements, etc. Therefore, it would be obvious to one skilled in the art that the sites are file servers, applications servers or computing elements.

As to claim 13, refer to claim 15 for rejection.

As to claim 25, CHEN teaches the set of transactions is to install software (copied Scout) (via copy the Scout to execute in the remote system) (pg. 216, "The Master instance knows beforehand which virtual sites have to be visited. (This can be achieved by looking at the virtual graph.. This information is conveyed to the first Scout instance, and then to the next Scout instance, and then to the Scout instance, so on. This way, each Scout instance knows whether it is the one to stop the creation of another.").

As to claims 34 and 35, CHEN teaches delivering a message (message) from the coordinator transaction agent (Master instance) to one of the plurality of transaction agents, i.e. the first transaction agent (Scout instances), instruction the state machine to transition state (pg. 216, The Multiple State machine model, "Each object in this model is a state machine, which is an instance of a state machine type...In this model, state machines can receive input messages and send out output messages....MSM model can support both the mobility and interaction behavior of agents. This is because each agent's behavior is modeled as a state machine; the interaction among agents is

models by the message-sending among these state machines; the migration/cloning of an agent is by sending a message from the agent to a specific site to create a new copy of itself and ending/continuing the executing in the current site."; pg. 219, 5.1.2 An example, "...In op_seq1, the instance of Scout will do the following....The information above will be used in Step three to revise templates and build the final state machine."; see also pages 219-222 that shows how the state machines create other objects and interact).

As to claim 36, CHEN does not explicitly state that the sites as equated above are network elements in particular an EMS. Official Notice is taken in that it is well known in the art that network elements are switches, routers, application servers, file servers, end-user workstations, etc. CHEN teaches the approach is to design mobile agent applications for content-based multimedia information retrieval or electronic commerce on the Internet (pg. 209, Introduction). It would be obvious that in for the agent to retrieve documents or any other data from various sites the agent is being sent to application servers, file servers, etc. Therefore, it would be obvious to one skilled in the art that the sites are file servers, applications servers, or an EMS.

As to claims 37 and 38, CHEN teaches the coordinator transaction agent (Master instance) and the plurality of transaction agents (Scout instances) are mobile agents that reside in agent environments (see abstract and page 209, Introduction).

As to claim 45, refer to claim 25 for rejection.

As to claim 48, refer to claim 36 for rejection.

As to claim 50, refer to claim 37 for rejection.

As to claims 3 and 4, KLEIN teaches the replicated transaction agents autonomously rolling back the state machine based on a criteria, i.e. a time out. (col. 2, lines 18-33).

As to claims 7 and 8, KLEIN teaches the distributed state machine is transitioned in lockstep or in turn (via the agents may commit in a two phase commit protocol (col. 2, lines 41 – col. 3, line 52) or (allowing one agent to finish before another agent finishes) (col. 4, lines 12-22).

As to claim 12, refer to claim 3 for rejection.

As to claims 18 and 19, KLEIN teaches detecting the unsuccessful completion of the current state based on the failure of the transaction agent (agent failed to prepare) to complete the transaction and invoking a roll back (abort) of the set of transactions (via the coordinator determining a fail or abort and messaging all agents to abort) (col. 3, lines 18-43).

As to claims 30 and 31, KLEIN teaches delivering to the coordinator transaction (coordinator) agent a message from the last plurality of transaction agents (agents) notifying the coordinator transaction agent that each of the plurality of replicated transaction agents is prepared to execute the transactions (prepare message) (col. 3, lines 4-43).

As to claims 32 and 33, refer to claims 7 and 8 for rejection.

As to claim 40, KLEIN teaches the detecting and instructing, together represents a distributed two phase commit protocol (col. 3, lines 4-43).

As to claim 41 and 42, refer to claims 3 and 4 for rejection.

As to claim 39, Official Notice is taken in that it authentication between distributed systems is well known in the art and therefore obvious in view of the teachings of CHEN and KLEIN to authenticate the remote systems before messages, i.e. software, is sent and executed on the remote system such that malicious code or virus does not corrupt the remote system.

4. Claims 5, 6, 9-11, 20-22, 24, 26-29, 44, 46, 47 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over CHEN in view of KLEIN as applied to claim 1

above, and further in view of "Intelligent and Mobile Agents and their Applicability to Service and Network Management" by EURESCOM and Applicant's Admitted Prior Art (APA).

CHEN and KLEIN substantially disclose the invention above. However, neither reference teaches the agent capable of enabling, disabling or labeling cross connects of network elements.

EUROSCOM teaches mobile agents are used for a) automating the detection, diagnosis and repair of software problems, b) support helpdesk technicians in their manual diagnosis and repair duties, c) help mobile users stay in contact with colleagues through dynamic configuration of services and e) enable customers, service provides, and network providers to negotiate automatically for services and network resources (pg. iii). It defines agents as software that act on behalf of another entity (pg. 2). EUROSCOM also teaches that agents perform remote Management Network Nodes configuration, i.e. to measure the travel time between two sites, size at departure, and size at arrival, reliability, creation and activation time to thereby configure the connection of Network nodes (pg. 11). However, EUROSCOM does not teach that the configuration includes enabling and disabling, i.e. provisioning and un-provisioning, facilities for cross connect or labeling a cross connect.

APA teaches that transactions are typically performed by a user to enable and disable cross connections (pg. 1-2, paragraphs 4-6). Therefore, it would be obvious to one skilled in the art at the time of the invention that since transactions are performed by mobile agents, to alleviate the users from handling network management

configuration (EUROSCOM), it would be obvious that the agents perform cross connections and all functions thereof. Therefore, it would be obvious to combine the teachings of CHEN with the teachings of KLEIN, EUROSCOM and APA in order to facilitate the autonomous performance of cross connection of network nodes by mobile agents.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571) 272-3759. The examiner can normally be reached on Monday-Friday, 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LEWIS A. BULLOCK, JR.
PRIMARY EXAMINER

May 12, 2005